Cover Stories:
Major Scientific Publications Featuring NRI-funded Research

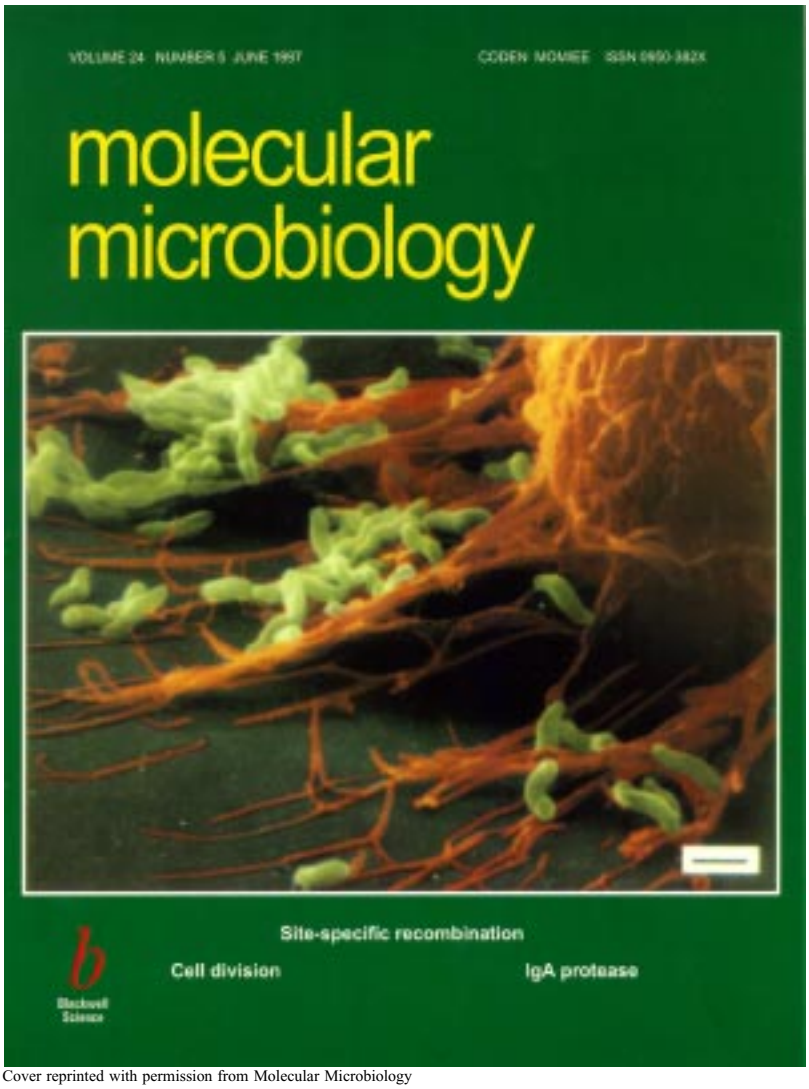
Knowledge For Tomorrow's Solutions

United States Department of Agriculture

Cooperative State Research, Education, and Extension Service

National Research Initiative Competitive Grants Program

Konkel, M.E., S.G. Garvis, S.L. Tipton, D.E. Anderson, Jr., and W. Cieplak, Jr.. 1997. Identification and molecular cloning of a gene encoding a fibronectin-binding protein (CadF) from Campylobacter jejuni. ***Molecular Microbiology*** *24(5): 953-963.*



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Gastrointestinal disease, sometimes resulting in death, is caused by a number of different bacterial pathogens. How to better control the impact of such bacteria on the human population is of obvious importance. Konkel and colleagues used NRI funding to focus on the bacterium, *Campylobacter jejuni,* and its ability to bind to intestinal cells. The ability to bind to a host's intestinal cells is considered essential for a bacterium's pathogenicity. Examining infected human embryonic intestine cells with a scanning electron microscope, Konkel and colleagues found that *C. jejuni* binds to a component of the extracellular matrix. Extracellular matrix components including fibronectin and collagen form a meshwork of interacting macromolecules that serve to stabilize tissue as well as regulate cellular behavior. Fibronectin (a fiber-forming glycoprotein composed of about 5% carbohydrates) was found to bind specifically to an outer membrane protein from *C. jejuni* of a unique mass (37 kDa). Konkel et al., who termed the outer membrane protein CadF, were able to clone and sequence the gene encoding CadF. Identification of binding proteins, such as CadF, could lead to the development of inexpensive, orally administered vaccines against gastrointestinal diseases. While vaccines that can be injected currently exist for some gastrointestinal diseases, a vaccine that can be administered orally would allow for a quicker response to outbreaks.

This research was supported by a grant from the NRICGP, Food Safety Program, Nutrition, Food Safety, and Health Division

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